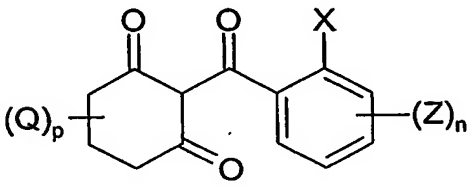
CLAIMS

1. A method for the season-long control of unwanted vegetation, said method comprising a single application of a herbicidal combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide.

2. A method according to claim 1 wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione is a compound of formula (I)



(I)

wherein X represents a halogen atom; a straight- or branched-chain alkyl or alkoxy group containing up to six carbon atoms which is optionally substituted by one or more groups $-OR^1$ or one or more halogen atoms; or a group selected from nitro, cyano, $-CO_2R^2$, $-S(O)_mR^1$, $-O(CH_2)_rOR^1$, $-COR^2$, $-NR^2R^3$, $-SO_2NR^2R^3$, $-CONR^2R^3$, $-CSNR^2R^3$ and $-OSO_2R^4$;

R^1 represents a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

R^2 and R^3 each independently represents a hydrogen atom; or a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

R^4 represents a straight-or branched-chain alkyl, alkenyl or alkynyl group containing up to six carbon atoms optionally substituted by one or more halogen atoms; or a cycloalkyl group containing from three to six carbon atoms;

each Z independently represents halo, nitro, cyano, $S(O)_mR^5$, $OS(O)_mR^5$, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} haloalkyl, C_{1-6} haloalkoxy, carboxy, C_{1-6} alkylcarbonyloxy, C_{1-6} alkoxycarbonyl, C_{1-6} alkylcarbonyl, amino, C_{1-6} alkylamino, C_{1-6} dialkylamino having independently the stated number of carbon atoms in each alkyl group, C_{1-6} alkylcarbonylamino, C_{1-6} alkoxycarbonylamino, C_{1-6} alkylaminocarbonylamino, C_{1-6} dialkylaminocarbonylamino having independently the stated number of carbon atoms in each alkyl group, C_{1-6}

alkoxycarbonyloxy, C_{1-6} alkylaminocarbonyloxy, C_{1-6} dialkylcarbonyloxy, phenylcarbonyl, substituted phenylcarbonyl, phenylcarbonyloxy, substituted phenylcarbonyloxy, phenylcarbonylamino, substituted phenylcarbonylamino, phenoxy or substituted phenoxy;

R^5 represents a straight or branched chain alkyl group containing up to six carbon atoms;

each Q independently represents C_{1-4} alkyl or $-CO_2R^6$ wherein R^6 is C_{1-4} alkyl;

m is zero, one or two;

n is zero or an integer from one to four;

r is one, two or three; and

p is zero or an integer from one to six

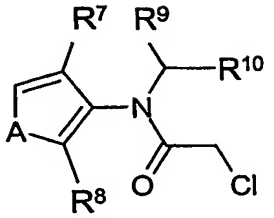
and any agriculturally acceptable metal chelate thereof formula (II).

3. A method according to claim 2, wherein X is chloro, bromo, nitro, cyano, C_1-C_4 alkyl, $-CF_3$, $-S(O)_mR^1$, or $-OR^1$; each Z is independently chloro, bromo, nitro, cyano, C_1-C_4 alkyl, $-CF_3$, $-OR^1$, $-OS(O)_mR^5$ or $-S(O)_mR^5$; n is one or two; and p is zero, one or two.

4. A method according to claim 3, wherein the 2-(substituted benzoyl)-1,3-cyclohexanedione of formula (I) is selected from the group consisting of 2-(2'-nitro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 2-(2'-nitro-4'-methylsulphonyloxybenzoyl)-1,3-cyclohexanedione, 2-(2'-chloro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 4,4-dimethyl-2-(4-methanesulphonyl-2-nitrobenzoyl)-1,3-cyclohexanedione, 2-(2-chloro-3-ethoxy-4-methanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione and 2-(2-chloro-3-ethoxy-4-ethanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione.

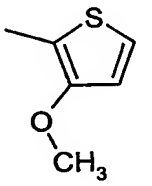
5. A method according to any one of claims 1 to 4, wherein the acetamide is a chloroacetamide or an oxyacetamide.

6. A method according to claim 5, wherein the chloroacetamide is a compound of formula (II)

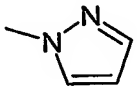


(II)

wherein R^7 is hydrogen, methyl or ethyl; R^8 is hydrogen, methyl or ethyl; R^9 is hydrogen or methyl; R^{10} is methyl, $-OCH_3$, $-CH_2OCH_3$, $-OCH_2CH_3$, $-CH_2OCH_2CH_2CH_3$, $-OCH(CH_3)_2$, $-OCH_2CH_2CH_2CH_3$ or a group



or



;

and A is S or CH=CH.

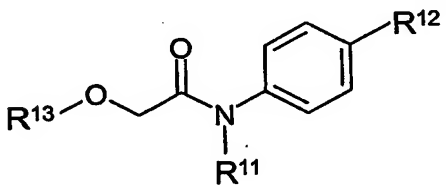
7. A method according to claim 6, wherein A is CH=CH; R^7 is hydrogen, methyl or ethyl; R^8 is hydrogen, methyl or ethyl; R^9 is hydrogen or methyl; R^{10} is methyl, $-OCH_3$, $-CH_2OCH_3$, $-OCH_2CH_3$, $-CH_2OCH_2CH_2CH_3$, $-OCH(CH_3)_2$, or $-OCH_2CH_2CH_2CH_3$.

8. A method according to claim 7, wherein the chloroacetamide is selected from the group consisting of metolachlor, acetochlor and alachlor.

9. A method according to claim 8, wherein the chloroacetamide is s-metolachlor.

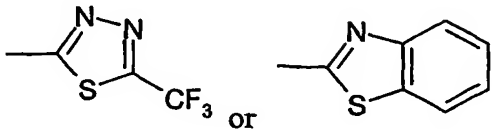
10. A method according to claim 6, wherein A is S; R^7, R^8 and R^9 are methyl; and R^{10} is methoxymethyl.

11. A method according to claim 5, wherein the oxyacetamide is a compound of formula (III)



(III)

wherein R^{11} is hydrogen, methyl, ethyl, propyl or isopropyl; R^{12} is hydrogen or halo; and R^{13} is a group



12. A method according to claim 11, wherein R^{11} is methyl or isopropyl; R^{12} is hydrogen or fluoro.

13. A method according to claim 12, wherein the oxyacetamide is flufenacet or mefanacet.

14. A method according to claim 13, wherein the oxyacetamide is flufenacet.

15. A method according to any one of claims 1 to 14, wherein the combination further comprises one or more additional active ingredients.

16. A method according to any one of claims 1 to 15, wherein the combination is applied post-emergence.

17. The use of a herbicidal combination comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide for the season-long control of unwanted vegetation by a single application of the combination.

18. A herbicidal composition comprising a 2-(substituted benzoyl)-1,3-cyclohexanedione or metal chelate thereof, glyphosate or a salt thereof and an acetamide, provided that (i) when the 2-(substituted benzoyl)-1,3-cyclohexanedione is mesotrione, then the acetamide is not metolachlor, acetochlor, alachlor or dimethenamide, and (ii) when the acetamide is dimethenamide, then the 2-(substituted benzoyl)-1,3-cyclohexanedione is not 2-(2-chloro-4-methanesulfonylbenzoyl)-1,3-cyclohexanedione or 2-(4-methylsulfonyloxy-2-nitrobenzoyl)-4,4,6,6-tetramethyl-1,3-cyclohexanedione.